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RESEARCH MEMORANDUM

A PROVISIONAL CORE CURRICULUM FOR INFANTRY NIGHT OPERATIONS TRAINING: CONCEPTUALIZATION AND PROPOSED CONTENT

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A PROVISIONAL CORE CURRICULUM FOR INFANTRY NIGHT OPERATIONS TRAINING: CONCEPTUALIZATION AND PROPOSED CONTENT

I. INTRODUCTION

The general mission of Task SWINGSHIFT is to identify training problems peculiar to the infantry during limited visibility and to develop training methods for infantry operations under these conditions at both squad and individual levels. The specific mission of Subtask SWINGSHIFT I is two-fold: (1) to identify skills underlying an infantry night operating core curriculum, and (2) to determine efficient means for transmitting this curriculum. Before efficient means for transmitting the skills required for participation in night operations can be determined, the content of the required curriculum must be specified. The purposes of this memorandum are: (1) to present the conceptualization of a core curriculum, and (2) to introduce the proposed content categories for a complete core curriculum intended to better prepare the infantryman for participation in dismounted tactical night operations as an individual and as a member of the rifle squad.

II. DEFINITION OF TERMS

Below are terms and [illegible] will be used in this paper. Most of these will be developed in greater detail later in the text.

Core Curriculum -- A training curriculum designed to teach the basic, most essential, or prerequisite knowledges and skills required for a given job, mission, or subsequent training.

Skill -- The ability to perform complex perceptual-motor acts with facility, precision, and adaptability to changing conditions. Skill is evaluated in terms of end results (5).

Fundamental Individual Skill -- A basic skill, necessary for further progress, required of an individual working either alone or in coordination with other individuals.

Tactical Team -- For the purposes of this paper a small TOE or special mission tactical unit composed of rifle platoon personnel. Examples of a tactical team for the purposes of this paper are: fire team, rifle squad, rocket launcher team, machinegun team, rifle platoon, or any type patrol organized from rifle platoon personnel.

Dismounted Tactical Operation -- For purposes of this paper, dismounted or footmobile infantry operations. Examples of these are: foot patrols, the dismounted attack, the dismounted withdrawal, and other operations which involve movement on foot.

III. CONCEPT OF THE CORE CURRICULUM

A. Why a Core Curriculum?

Initial SWINGSHIFT inquiries into the training problems underlying deficient performance by the American infantryman in night operations resulted in these general conclusions:

1. Insufficient time is devoted to training individuals and small units for night operations.

2. Current night training neglects the fundamental skills required for this type of operation.

The insufficient time problem is essentially an administrative and training management problem stemming from an interaction of training policy, cost, morale, safety, training facility, and motivational considerations. It could be remedied by a decision to increase the number of hours of night training. This would probably lead to improved individual and unit proficiency in night operations, because of the increased experience acquired in operating out-of-doors at night. However, increasing the number of hours devoted to night training and actually training at night, in themselves, are not necessarily the most efficient

and effective ways of improving night operating effectiveness.[1]

It is proposed that the most effective method of training for night operations is to couple increased training hours to a systematic build-up of performance complexity in night operations training. A somewhat more detailed consideration of present training deficiencies will show why it is proposed that this be accomplished.

Why is present training neglectful of the fundamentals? Perusal of ATP's 21-114 (3), 7-17 (2), and 7-1 (1) indicates that training for night operations is presented in logical sequence when the ATP's are followed literally, because it proceeds from individual day and night training, to patrolling, to tactical training at squad, platoon, company, and battle group levels. Based on personal observation of practical exercises in training, discussing training exercises observed by members of Task PATROL, discussing night combat operations and infantry training with

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[1] A 1951-article in a semi-official Swedish military journal (6) reports a similar conclusion. The Swedish Supreme Command, recognizing the need for good 'night soldiers,' issued instructions regarding night training. These instructions resulted in units scheduling 'dark weeks,' apparently a scheduling technique for increasing the time actually spent training after dark during certain phases of training. The author points out "In spite of this, it is apparent that the individual soldier's capability to act in the dark has not come up to expectations" (p.2). He attributes this to basic training having been too brief and to varying standards within training units, which are the result of a lack of training objectives derived from fundamental doctrine on patrol and from larger unit's actions during night combat. It is felt that prior to a soldier's participation in field exercises, "... in addition to a number of successfully accomplished training periods on a miniature scale, it seems advisable he also accomplish a number of basic night training periods before he is transferred to unit training" (p.2). (Note: underlining mine). The author goes on to specify the basic night subjects in which the soldier should be "drilled." These subjects are (1) arrangement of equipment, (2) camouflage, (3) silent movement, (4) unobserved movement, (5) recognition of night noises, (6) observation of night noises, (7) shooting at night, (8) map and compass work at night, (9) advance in low position for long distances, and (10) crossing obstacles. In short, the soldier should be well trained in certain fundamental skills before participation in night operations.

experienced infantrymen, and reading descriptions of night operations, it appears that infantry performance in night operations is substandard in spite of this prescribed logical flow of training from the individual to large units. A closer examination of the problem leads to the conclusion that this build-up fails because the fundamental skills required of the individual, the so-called "little things" critical to successful operations, are slighted in training. Some examples of the reported deficiencies indicative of the neglect of fundamental skills are: (1) violation of noise discipline, (2) difficulty maintaining contact at night, (3) difficulty moving quietly at night, (4) difficulty maintaining direction at night, and (5) difficulty detecting targets at night.

In training, the student infantryman will generally learn fundamental skills in at least two types of training situations. (Situation 1) As part of formal individual training, the trainee may be told about the necessity of applying each fundamental skill, and the fundamental will be demonstrated to him. Next, another fundamental will be explained and demonstrated, and another, and another, until all fundamentals are explained and demonstrated. Usually practice in applying these fundamentals does not come until <u>all</u> fundamentals have been explained and demonstrated. The practice period is usually one in which the trainee must apply <u>all</u> he has heard and seen in the preceding periods of instruction in a tactical exercise requiring the integrated application of all fundamental skills. Although, technically, this practical exercise may be part of individual training, the trainee may or may not be given knowledge of performance concerning how well he applied the fundamentals depending on the powers of observation, the zeal, and the frame of reference of the instructor group. He may even find the instructor giving him knowledge of performance concerning how well he executed tactical procedures rather than fundamentals. From this training situation, he goes on to tactical procedures training without correcting and perfecting his application of fundamentals in a formal training sense.

(Situation 2) There are some instances in which fundamental skills may not be made known to the young infantryman until he actually fails to apply them in a tactical training exercise. In these situations the trainee learns his fundamentals strictly on the job, either on the spot when he erred or as part of post-exercise critique. In general, he is given verbal knowledge of his weakness and its consequences. It is then usually left up to him to avoid committing this error in the future. It should be pointed out this knowledge of performance may tend to be very general, and it may be left up to the trainee to determine specifically what he did wrong.

The preceding characterization of night operations training indicates these major areas of weakness:

(1) Inadequate individual practice of fundamental skills.

(2) Inadequate knowledge of performance given to students.

(3) Premature participation by the student infantryman in tactical team training.

(4) Lack of systematic integration of fundamental skills into tactical team training.

Thus, inadequate individual practice results in the student infantryman's being called upon to apply individual skills as part of a team before he has been adequately grounded in these skills. Adequate supervision of practice and timely and appropriate knowledge of performance are therefore lacking since tactical team training is emphasized and deals only incidentally with individual skills. This absence of progressive systematic integration of fundamental skills into advanced training can be likened to requiring candidates for a football team to participate in team scrimmage before they have been grounded in fundamentals such as tackling, blocking, passing, and kicking.

In general, then, the obvious deficiences in preparing the infantryman for night tactical operations appear to lie in the areas of (1) practice, (2) knowledge of performance, (3) sequence of training, and (4) skill integration. Before these areas can be explored by training research, it must be determined what is expected of the individual infantry-

man in the night tactical operation and how well he should be expected to perform these required skills and knowledges. The remainder of this paper is concerned with the determination of the general performance requirements of the infantryman in the night operation and the specification of the general subject matter categories or content of a core curriculum for infantry night operation. The specification of the general content for a core curriculum is the key to developing proficiency standards, practice exercises, skill integration exercises, proper sequence of training, and knowledge of performance dissemination techniques and methods.

In conclusion, ideally, the core curriculum approach to night training is intended to remedy present deficiencies in night operations so the individual infantryman can better perform his role in the tactical operation at night. This may be done by identifying the fundamental individual skills required for participation in the night operation, deriving training content from the required fundamental individual skills, requiring the student infantryman to master these skills to prescribed levels of proficiency, and systematically integrating or combining these skills into more complex performances which also must be mastered. This process entails a systematic organization of content, practice, training sequence, knowledge of performance techniques, and time.

B. Development of a Core Curriculum

A core curriculum was defined earlier as "a training curriculum designed to teach the basic, most essential, or prerequisite knowledges and skills required for a given job, mission, or advanced training." It can be assumed that a tactical action is a complex, integrated performance composed of a sequence of sub-performances or plays leading to the accomplishment of a mission, and that the action can be distilled into its sub-performances. These sub-performances may be translated into performance requirements for individuals which must be met in order to accomplish a tactical mission. The abilities to land navigate, to move quietly, and to detect targets are examples of individual performance requirements. Over-all tactical proficiency is assumed to be a function

of how well all performance requirements are met. It is also assumed to be a function of how well each performance requirement is met singly and in combinations. The more performance requirements in which proficiency is increased, the greater should be the improvement in over-all tactical performance. Therefore, core curriculum training should be designed to improve proficiency in all the major performance requirements for a given class of tactical operation.

Since a core curriculum is intended to impart the basic, most essential, or prerequisite knowledges and skills and since the American infantryman is judged to need improvement in the fundamental skills involved in night operations, a core curriculum for night operations should be designed to impart those fundamental skills essential to night operations, and not to teach complex tactics.

In summary, a core curriculum for night operations will be addressed to the major individual performance requirements for a night operation and will be designed to impart those fundamental skills underlying the implementation of infantry night tactics.

C. Composition of a Core Curriculum

A core curriculum will consist of one or more subject content areas in which each area represents a major fundamental component of the total performance. Each subject content area represents a cluster of highly related training content, addressed to imparting the fundamentals for a given performance requirement. Each area should be relatively independent of other areas in terms of subject content.

In the SWINGSHIFT core curriculum, these content areas will be called Fundamental Individual Night Skills Areas, or FINS Areas for short, because they represent fundamental individual skills for night operations. These skills are regarded as fundamental, because they underlie the implementation of tactical procedures and techniques. They are individual, because the individual infantryman is responsible for employing them, whether he is working alone or in coordination with others. These are night skills, because they are considered specific to night operations. The SWINGSHIFT core curriculum will be composed of eight FINS Areas, as we shall see later.

D. Possible Forms of Core Curriculum Implementation

The reader may be under the impression by now that the core curriculum is intended to be a solid block of instruction at some stage of the infantryman's training. This is not necessarily the case. The curriculum could be implemented into Army training in many ways. Several of the possibilities are: (1) as a solid block of instruction in BCT, AIT, or unit training, (2) as blocks of instruction at certain relevant portions of BCT, AIT, or unit training, (3) as part of a program of instruction for special purpose units or specialists such as Rangers, Special Forces, Recondo's, etc., (4) as recurring drills in fundamentals throughout a unit's yearly training cycle, or (5) as combinations of all the preceding. At the present time the form of implementation remains to be determined.

E. Administration of a Core Curriculum

The core curriculum approach to night training, as presently conceived, has certain features which should facilitate the implementation of core curriculum training and the organization of the research effort to develop it. To help develop these points, assume a hypothetical Army Training Test for Night Operations ("NIGHT ATT") exists which is sensitive to changes in training methods and which can be used to assess performance of a tactical team.

Furthermore, assume that units composed of individuals trained under current night training methods achieve a given score on the "NIGHT ATT." Now it is decided to implement a core curriculum-type approach to night operations. Since the core curriculum is composed of FINS Areas, each oriented toward improving proficiency in a given performance area, it should be possible to constructively phase-in the curriculum area by area until the entire core curriculum has been implemented. This is possible because proficiency in each FINS Area should make an individual contribution to the over-all unit proficiency score on our "NIGHT ATT." This means it should be possible to insert concentrated training in one FINS Area into an existing training program and expect a measurable increment in over-all team proficiency. Other FINS Areas can then be added one by one and proficiency increments can be expected with the addition of each

Area, until a high level of proficiency is achieved when all Areas are included in the training program. Maximal proficiency in night operations, however, will not result from a core curriculum composed of independent packages of FINS Areas training. It will result from an integrated core curriculum in which intra-Area training sequence, over-all training sequence, and the interaction among Areas, training methods, and training time have been taken into consideration.

From the point of view of the organization of the research effort, the core curriculum and FINS Area approach permits undertaking the development of the core curriculum an Area at a time, because the development and implementation of each FINS Area should contribute to over-all team proficiency. The final portion of the research undertaking should culminate in the final integration of all FINS Areas into a complete core curriculum.

IV. A CORE CURRICULUM FOR NIGHT TRAINING

In the preceding section, the concept of the core curriculum was described. In this section, the Fundamental Individual Night Skills Areas which make-up the SWINGSHIFT core curriculum for night training are introduced and a brief description is given of how content Areas were derived.

A. Assumptions Concerning Night Operations

Before deriving the FINS Areas, some tentative assumptions concerning infantry doctrine, characteristics of infantry operations, and problems in infantry operations were made, in general, and with respect to night operations. These assumptions were designed to serve as guidance in:

1. Identifying the performance requirements of the infantryman as a member of a small unit.
2. Determining critical night operational problems.
3. Ascertaining which types of units should be considered in the identification of the content.
4. Ascertaining which infantry jobs should be considered in the identification of the content.

5. Ascertaining who should receive core curriculum training.

6. Determining the scope of curriculum.

7. Establishing proficiency levels.

A complete list of SWINGSHIFT's infantry operations and doctrinal assumptions is contained in Appendix A of this paper. The premises drawn from these, pertinent to the identification of the content of the core curriculum, are summarized below.

1. Attention should be focused on nonilluminated dismounted night operations such as the attack, withdrawal, and patrol operations.

2. Performance requirements should be based on current tactical doctrine for the dismounted patrol, rifle squad, and rifle platoon, since it is felt this basic doctrine will not radically change during the next few years.

3. The tasks of the Light Weapons Infantryman both as an individual and as a member of a tactical team should be the basis for identifying the components of this curriculum.

4. Proficiency in core curriculum content should be required of all personnel normally assigned to a rifle platoon, since the tactical proficiency of a unit is assumed to be a significant function of how well all its members have mastered the required fundamental skills.

5. A core curriculum should be common to all types of dismounted infantry night operations.

6. Each member of a tactical team should be trained in certain basic knowledges and skills which will facilitate at least some minimum level of interchangeability among team members.

B. Method for Identifying the Content of the Core Curriculum

The tentative core curriculum for dismounted night tactical operations was evolved by examining tactical doctrine and procedures for the rifle platoon, rifle squad, and foot patrol (4,6) and determining performance requirements from these sources. Doctrinal and procedural sources were supplemented by additional information on doctrine, procedures, operational problems encountered, and observed performance deficiencies obtained from conferences with selected USAIS instructors, selected officers and NCO's

of the 101st Airborne Division, active Army and retired military personnel assigned to the Infantry Human Research Unit, and researchers who have had research experience in problem areas related to SWINGSHIFT.

Using the information obtained from these sources, general performance requirements for participation in night operations were deduced. These requirements were translated into general skill requirements, and the skills were logically classified according to their apparent relatedness. These groupings of general skill requirements make up the Fundamental Individual Night Skills Areas which compose the core curriculum. In all, eight FINS Areas were identified.

The following capabilities and limitations of a core curriculum thus derived should be pointed out:

1. The FINS Areas represent performance requirements, not areas of deficient performance. However, the identification of these areas does furnish a frame of reference for the determination of deficient performance.

2. Knowledge of the FINS Areas does not yield any information concerning their relative contribution to over-all team tactical performance. This can only be determined by an empirical study of the relationship of Areas to team performance. However, knowing the FINS Areas does furnish a frame of reference for the study of these relationships.

3. Knowledge of the FINS Areas provides a frame of reference for the development of a training program, in that it provides content categories. It does not necessarily furnish information as to how areas interact or how to organize them in this training program.

Having identified a core curriculum, in the manner described above, it is necessary to confirm its completeness, or determine its commissions, or omissions, by having it reviewed by experts who have first-hand experience in training personnel to participate in the type operation to which the curriculum is addressed or who are otherwise familiar with the problems encountered in this type operation. To accomplish the review of

the SWINGSHIFT core curriculum, a draft Task Paper (9) which paralleled this memorandum in content, and which was specifically tailored for the military reader, was prepared. This paper was then forwarded to the appropriate instructional departments of USAIS for review and comment.

In general, reviewing departments indicated that the list of FINS Areas was complete and the general opinion was expressed that good night training does and should cover all FINS Areas. No additional FINS Areas were suggested. Comments by the departments revolved around night training problems in general, specific content inclusions within FINS Areas, and suggested uses for the FINS Areas. Based on the comments received, it can be concluded that the FINS Areas do represent the fundamentals for current night operations training. Since the possibility always exists that a list of required fundamentals may be revised as a result of knowledge gained concerning the problem area and changes in doctrine, this curriculum will be termed a provisional core curriculum. This connotes the FINS Areas should be critically reviewed from time to time to ascertain whether they still reflect the performance requirements in light of observations, information, and data amassed since their conception.

C. The Eight Major Performance Requirements for Night Operations

Examination of tactical doctrine, procedures, and associated problems suggests that individual infantrymen (LWI) must be proficient in meeting the following eight major performance requirements to make the greatest contribution to team performance in dismounted night tactical operations.

HE MUST BE:

1. THOROUGHLY FAMILIAR WITH THE CHARACTERISTICS OF HIS OPERATIONAL ENVIRONMENT, IN THIS CASE THE PROBLEMS OF OPERATING OVER TERRAIN AT NIGHT.

2. ABLE TO FIND HIS WAY ACROSS COUNTRY AT NIGHT AND MAINTAIN HIS DIRECTION OF MOVEMENT.

3. ABLE TO DETECT, LOCATE, AND IDENTIFY TARGETS AT NIGHT AND MAKE OTHER TACTICALLY RELEVANT INTERPRETATIONS OF HIS OPERATIONAL ENVIRONMENT FROM SENSORY INFORMATION.

4. ABLE TO AVOID BEING DETECTED BY THE ENEMY AT NIGHT.

5. ABLE TO MOVE ACROSS COUNTRY AT NIGHT AS A MEMBER OF A TACTICAL TEAM AND WITHOUT BECOMING SEPARATED FROM THE TEAM.

6. ABLE TO USE TECHNIQUES FOR COMMUNICATING INFORMATION WITHIN THE TEAM SO THAT HE CAN RESPOND TO THE TEAM LEADER'S INSTRUCTIONS, FACILITATE TEAM CONTROL, AND CONTROL A TEAM IN AN EMERGENCY SITUATION.

7. ABLE TO USE THE APPROPRIATE TECHNIQUES AND METHODS OF ENGAGING TARGETS WITH RIFLE PLATOON WEAPONS AT NIGHT.

8. ABLE TO OPERATE, IDENTIFY, MAINTAIN, AND INSTALL, BY TOUCH, CERTAIN ITEMS OF EQUIPMENT WHICH HE WILL USE AT NIGHT.

These performance requirements are the basis of Fundamental Individual Night Skills Areas which make up the SWINGSHIFT Core Curriculum.

D. Provisional Core Curriculum

The provisional core curriculum derived by Task SWINGSHIFT is composed of eight Fundamental Individual Night Skills Areas. These are shown in Table 1. The order of appearance of these Areas in the table does not necessarily imply their relative order of importance to night operations, the programming of the curriculum, or research priorities. These will be determined by additional analysis of operational problems. The FINS Areas will be described at a rather general level in Section V. A detailed specification of the dimensions, factors, interactions, and specific skills involved in each Area will be undertaken during the training methods research phase of the Task.

V. PROVISIONAL CORE CURRICULUM

A. FINS Area I -- Night Environmental Familiarization

1. Performance Requirement

The individual infantryman must be thoroughly familiar with the characteristics of his operational environment, in this case the problems of operating over terrain at night.

TABLE 1

FUNDAMENTAL INDIVIDUAL NIGHT SKILLS AREAS IN
THE PROVISIONAL CORE CURRICULUM FOR NIGHT OPERATIONS TRAINING

Fundamental Individual Night Skills Area Code	Descriptive Title of FINS Areas
I	General Night Environmental Familiarization
II	Night Direction Finding
III	Night Target Detection
IV	Avoidance of Detection at Night
V	Coordinated Night Movement
VI	Intra-Team Communication at Night
VII	Night Target Engagement
VIII	Tactual Discrimination and Manipulation Training

2. Discussion of Performance Requirement

Area I training is a general training factor underlying the remaining seven FINS Areas. The night operational environment is characterized by reduced illumination, a consequent change in the appearance of terrain and terrain features, a reduction in visual cues available, and changes in sound transmission. The infantryman must become thoroughly acquainted with these characteristics of the night environment in order to achieve greater freedom of action and overcome any fear of the darkness which may restrict his action potential. This can be achieved by teaching the infantryman to utilize available stimuli more fully in the reduced-cue night environment, to associate characteristics of the terrain readily available during the daylight hours with the limited stimuli available in the darkness, to make rapid environmental discriminations while moving, to become more fully aware of differential sound transmission at night, to more fully utilize sounds at night, to use cues from body movement to judge terrain configuration, and to prepare and protect his sensory receptors during night operations.

3. Concept of FINS Area I Training Content

FINS Area I training is intended to provide the infantryman with experience in operating out-of-doors at night. Training in Area I can be either tactical or non-tactical. An example of possible Area I training within the framework of current practices would be increased night tactical training. Possible specific Area I training might be concerned with: (a) terrain feature appearance at night, (b) terrain negotiation at night, (c) sound transmission at night, (d) utilization of body movement cues at night, and (e) night vision training.

4. Some Expected Performance Gains

Having had Area I training, the individual should be better able: (a) to walk across country at night with decreased probability of incurring personal injuries from encounters with obstacles, such as low-hanging branches, logs, bushes, rocks, dead-fall, holes, etc., because he is more able to detect and avoid them, (b) to move more rapidly across country at night due to less time lost from encounters with these obstacles, (c) to relate the daytime characteristics of terrain features for cover and

concealment, (d) to avoid terrain features which would enhance his being detected by an enemy, and avoid or exercise caution in terrain features characterized by dried grass, dry brush, dead-fall, etc., which would generate undue noise as he passes through it, (e) to select routes and navigational landmarks at night, (f) to control noise made by himself and to better detect and locate targets by sound because he has become more appreciative of sound propagation at night, (g) to prepare his eyes for night use, protect his night vision, deal with visual illusions, appreciate light discipline, and take advantage of enemy laxities in light discipline, and (h) to generally feel more confident in his ability to operate at night.

5. Relationship of FINS Area I to Other FINS Areas

FINS Area I is probably an essential prerequisite to the remaining FINS Areas.

B. FINS Area II -- Night Direction Finding

1. Performance Requirement

The individual infantryman must be able to find his way across country at night and maintain his direction of movement.

2. Discussion of Performance Requirement

During the night tactical operation, the infantryman is required: (a) to maintain his sense of orientation, or have a general idea where the enemy is, while moving across terrain, and (b) to maintain his direction of movement on a relatively short distance, straight-line course. He may be required to find his own way or guide a tactical team to an objective over a short, medium, or long distance multiple-leg course. Proficiency in this Area is essential if the individual and his team are to reach an assigned tactical objective.

3. Concept of FINS Area II Training Content

FINS Area II is intended to impart the "Night Direction Finding" skills which may be required by the individual infantryman at night.

Examples of possible Area II training are: (a) night land navigation and terrain association, (b) maintaining a sense of direction at night, and (c) maintaining direction while moving at night.

4. Some Expected Performance Gains

As a result of FINS Area II training, the individual should be able: (a) to land navigate a reasonable distance across country with an acceptable degree of accuracy over a multiple-leg course, (b) to maintain direction while moving relatively short distances across terrain without losing direction over a straight-line course, and (c) to maintain a general sense of orientation in the tactical situation of where the enemy is and where the friendly forces are.

5. Relationship of FINS Area II to Other FINS Areas

"Night Direction Finding" should be preceded by "Night Environmental Familiarization" to familiarize the student with the appearance of terrain and possible steering marks at night. Some "Target Detection," FINS Area III, training may facilitate the detection, location, and identification of visual reference points for navigational use and the maintenance of direction and orientation.

C. FINS Area III -- Night Target Detection[1]

1. Performance Requirement

The individual infantryman must be able to detect, locate, and identify targets at night and make other tactically relevant interpretations of his operational environment from sensory information.

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[1] The Area title "Night Target Detection" subsumes the acts of (1) detecting, (2) locating, and (3) identifying objects of tactical interest at night. (1) Detecting is the process of establishing the presence of an object of tactical interest in an environmental stimulus complex. (2) Locating is the process of establishing where in the stimulus complex an object is located. (3) Identifying is the process of establishing the nature of the object and its relevance to the tactical mission, such as whether it is friendly or enemy.

2. Discussion of the Performance Requirement

Target detection at night is difficult because the number of visual cues readily available in daylight are drastically reduced in number and kind. The infantryman must learn to utilize and interpret minimal visual information at night and learn to make greater use of and interpret auditory information to supplement and replace visual information.

During the night operation, the individual infantryman will be required to detect, locate, and identify objects of tactical interest[1] by sight and/or sound. The process of detection, location, and identification is necessary in finding the enemy, engaging targets, differentiating friendly forces from enemy forces, locating enemy installations, knowing when to apply stealth, locating landmarks and terrain features, etc.

3. Concept of FINS Area III Training Content

FINS Area III is concerned with imparting, to the individual, visual and auditory techniques of detecting, locating, and identifying objects of tactical relevancy at night. Examples of possible Area III training are: (a) night visual target detection and identification, (b) auditory target detection, localization, and identification, (c) sound interpretations, and (d) target detection while moving and stationary.

4. Some Expected Performance Gains

FINS Area III training should improve the accuracy of the individual infantryman's ability to detect, locate, and identify any objects of tactical interest at night by sight and/or sound.

5. Relationship of FINS Area III to Other FINS Areas

"Night Environmental Familiarization, FINS Area I, is a prerequisite to "Night Target Detection" to generally familiarize the individual with the visual appearance of objects at night and sound transmission at night. "Night Target Detection" is a prerequisite in varying degrees to FINS Areas II, IV, V, VI, and VII.

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[1] Objects of tactical interest are friendly or enemy personnel, positions, equipment, installations; landmarks; terrain features; etc.

D. FINS Area IV -- Avoidance of Detection at Night

1. Performance Requirement

The individual infantryman must be able to avoid being detected by the enemy at night.

2. Discussion of the Performance Requirement

As the tactical team closes with the enemy or moves through enemy-held territory, the team members must try to avoid being detected by enemy observers and detection devices. This is essential if the team is to avoid, to surprise, or to break contact with the enemy. An enemy may be capable of detecting team members visually or aurally with electronic, mechanical, and thermal aids and devices, and by visible and invisible illuminants. The infantry team members must develop proficiency in the skills necessary to avoid or minimize detection by whatever means the enemy has available.

3. Concept of FINS Area IV Training Content

FINS Area IV training is concerned with imparting to the individual the skills essential for the avoidance of detection at night and with developing proficiency in these skills. Examples of possible Area IV training are: (a) silent movement at night, (b) personal camouflage at night, (c) preparation of equipment for silent movement, (d) noise and light discipline, (e) fire discipline, (f) use and recognition of ruses, (g) actions to be taken when the enemy uses illuminants, (h) techniques of evading detection by ground radar and infra-red, (i) technique for crossing barriers, and (j) coordinated silent movement for teams.

4. Some Expected Performance Gains

The over-all goal of FINS Area IV training is to improve the ability of the individual infantry soldier to avoid detection by the enemy at night.

5. Relationship of FINS Area IV to Other FINS Areas

"Night Environmental Familiarization," FINS Area I, is the first prerequisite to "Avoidance of Detection at Night." The meaningfulness of Area IV can be enhanced by coupling it with Area III, "Night Target Detection." "Coordinated Night Movement," Area V, should be combined with coordinated team stealth training in Area IV at some point in training.

E. FINS Area V -- Coordinated Night Movement

1. Performance Requirement

The individual infantryman must be able to move across country at night as a member of a tactical team and not become separated from the team.

2. Discussion of the Performance Requirement

During the night operation, as well as in the day tactical operation, the members of a tactical team will move toward their objective in a specified tactical formation such as a column, file, line, or other formation appropriate to the situation. At times the team may be required to change formation. Moving in formation and changing formation requires that the team members maintain contact with one another to insure that all team members arrive at the objective and that no team member becomes separated from the group. Contact can be maintained by the utilization of visual, auditory, and tactual cues, and aids which may enhance these cues. The maintenance of contact using only visual cues is difficult due to reduced illumination at night. This means the team members will have to maintain contact using only limited visual information and aids, such as luminous tape, which enhance the use of visual information, or they will have to rely upon auditory or tactual cues as supplementary aids to maintain contact while moving in formation at night.

3. Concept of FINS Area V Training Content

FINS Area V training will deal with the problem of teaching personnel to move in combat formations and to change formations at night using available visual information, visual aids, auditory information, and tactual information. Examples of possible Area V training are: (a) maintaining and changing formations using aids such as luminous tape, arm bands, helmet markers, etc., (b) maintaining contact and changing formations using auditory information, and (c) maintaining and changing formations using tactual cues.

4. Some Expected Performance Gains

As a result of Area V training, team members should be more proficient in moving in and changing formations at night. Some possible

indicators of proficiency in this Area might be: (a) fewer persons becoming separated from the team, (b) less time lost due to the team having to stop to allow members to regain contact, and (c) more rapid team movement across country in formation at night.

5. Relationship of FINS Area V to Other FINS Areas

"Coordinated Night Movement" could be given alone with only Area I, "Night Environmental Familiarization," as a prerequisite. In this instance, team members would be taught simply to move in formation at night and change formation at night. "Coordinated Night Movement" should be coordinated with "Intra-Team Communication," Area VI, at some point in training to insure that the requirements of moving in formation and changing formation can be controlled by instructions from the team leader. Maintaining contact could possibly be enhanced by preceding this training with some elements of Area III training, "Night Target Detection." Quiet movement as a team would require integrating Area IV training with Area V training.

F. FINS Area VI -- Intra-Team Communication at Night

1. Performance Requirement

The individual infantryman must know and be able to use techniques for communicating information within the team so that he can respond to the team leader's instructions, facilitate team control, and control a team in an emergency situation.

2. Discussion of the Performance Requirement

During the night operation, each team member must know and be able to use the techniques and methods for transmitting information within the team at night. This is necessary if the individual is to respond properly to the orders from the team leader, send information to the team leader, or be able to control the actions of a tactical team in an emergency situation. In short, being able to disseminate information within a team is essential to team control at night.

The information which is to be disseminated may be orders, instructions, warnings, or signals to initiate standing operating procedures. These may

be initiated by the team leader as well as by the team members, depending on the situation. In any case, the signals must be suitable for night use and they must be transmitted to the user of the information.

These messages may be visual, auditory, or tactual. Due to darkness, visual signals will be difficult to use so there will be greater reliance on auditory and tactual techniques of intra-team communication at night. The use of standing operating procedures is also included within this Area.

3. Concept of FINS Area VI Training Content

FINS Area VI training entails imparting the basic techniques and methods appropriate to intra-team communications at night. Examples of possible Area VI training are: (a) visual signals for night use, (b) auditory signals for night use, (c) touch signals for night use, and (d) use of prearranged actions and standing operating procedures at night.

4. Some Expected Performance Gains

As a result of Area VI training, the individual should: (a) know how to use appropriate intra-team communication methods and techniques for night operations, (b) be able to use them and respond to them more accurately and rapidly, and (c) be able to employ them as a team leader.

5. Relationship of FINS Area VI to Other FINS Areas

Area VI should be preceded by "Night Environmental Familiarization." The meaningfulness of Area VI training can be enhanced if it is interspersed with Areas II, III, IV, V, and VII.

G. FINS Area VII -- Night Target Engagement

1. Performance Requirement

The individual infantryman must be able to use the appropriate techniques and methods of engaging targets at night with rifle platoon weapons.

2. Discussion of the Performance Requirement

At certain stages of the night operation, team members may be required to engage the enemy with the weapons available to the rifle platoon -- rifle, AR, light machinegun, rocket launcher, grenades, or other anti-personnel weapons which may be made available. Silent techniques for

eliminating the enemy are also included here. Engaging targets at night is difficult, because of the reduced amount of visual information available. To compensate for this requires: (a) the utilization of specialized weapons aligning techniques, (b) special sighting devices, (c) special techniques for controlling and correcting weapons fire of individuals and teams, and (d) the use of alternate cues for engaging and eliminating the enemy. The individual must then acquire these skills and develop proficiency in them to utilize them effectively in night combat.

3. Concept of FINS Area VII Training Content

Area VII training is intended specifically to impart the skills necessary for night target engagement. The emphasis in this Area is on the use of weapons, techniques, and devices to engage the enemy at night. Examples of possible specific training in Area VII are: (a) night weapons sighting techniques, (b) use of night weapons sighting aids and devices, (c) techniques for correcting weapons fire, (d) techniques of weapons fire for individuals and teams, (e) fire control, (f) use of hand grenades at night, (g) use of firing devices, (h) silent means of eliminating the enemy, (i) use of illumination devices, and (j) adjusting fires of supporting weapons at night.

4. Some Expected Performance Gains

As a result of Area VII training, the individual and team should be able to achieve greater lethality and psychological effect with infantry weapons and target engagement techniques at night.

5. Relationship of FINS Area VII to Other FINS Areas

It is essential that FINS Area VII training be coupled with FINS Area III, "Night Target Detection," training. The reason for this is obvious. Another prerequisite for Area VII training is Area VIII training to facilitate the mechanical manipulation of weapons and devices. "Silent Means of Eliminating an Enemy" training, if undertaken, would have to be coupled with Area IV training, "Avoidance of Detection at Night," for maximum training effectiveness, in addition to Area III.

H. FINS Area VIII -- Tactual Discrimination and Manipulation Training

1. Performance Requirement

The individual infantryman must be able to identify, operate, maintain, and install, by touch, certain items of equipment which he will use at night.

2. Discussion of the Performance Requirement

During the night operation, the infantryman may be required to perform some of the following manipulatory tasks: (a) clean his weapon, (b) load and unload his weapon, (c) operate his weapon, (d) remedy a weapon malfunction, (e) identify and select the appropriate type of grenade, if he is carrying more than one type, (f) discriminate between a crimp cartridge and ball ammunition, (g) set mines, boobytraps, and demolitions and disarm similar devices, (h) operate communications equipment, (i) locate and identify equipment he is carrying, and (j) administer first aid. During daytime these tasks can be performed relatively easily, because the soldier can see what he is doing. At night, however, these tasks are more difficult to perform because the amount of visual information available during the daytime is drastically reduced and the individual must place a greater reliance on his sense of touch to perform these tasks. This requires that the individual's skill in the use of the sense of touch to perform the important discriminations and manipulations required at night be developed to a high level of proficiency.

3. Concept of FINS Area VIII Training Content

Area VIII training is intended to improve the LWI's ability to use tactual discrimination and manipulation skills at night. Examples of possible Area VIII tactual training are: (a) disassembly and assembly of weapons, (b) loading and unloading of weapons, (c) correcting weapons malfunctions, (d) ammunition identification, (e) grenade identification and operations, (f) operating communications equipment, (g) setting and deactivating mines and boobytraps, (h) placing equipment on the body where it can be easily reached, (i) identifying items of equipment being carried, and (j) administering first aid.

4. Some Expected Performance Gains of FINS Area VIII

As a result of Area VIII training, the individual should be able to identify and operate items of equipment and components of equipment by feel accurately, rapidly, and with a minimum of lost time.

5. Relationship of FINS Area VIII to Other Areas

FINS Area VIII may have no FINS Area prerequisites, except Area I, because the individual must be familiar with the general problems associated with night operations in order to appreciate the necessity of Area VIII training. Area VIII training may be prerequisite to Area VII, "Night Target Engagement," in order to facilitate the mechanical manipulations of weapons dealt with in night, target-engagement training. Area VIII training probably underlies, to some extent, other skill Areas in which the tactual identification and manipulation of equipment in the dark is an important factor.

VI. SUMMARY

An analysis of infantry night operations problems suggests (1) the greatest area of operational weakness lies in the dismounted night tactical operation, and (2) night training for the individual Light Weapons Infantryman pays insufficient attention to the fundamental skills in which he must be proficient prior to his becoming a satisfactory night fighter.

Prior to undertaking training methods research on these problems, it is necessary to determine what are the required fundamental skills for night combat and consequently the subject matter for training designed to improve the individual's proficiency in night operations. Considering these factors, tactical doctrine and procedures for the small infantry unit were analyzed and eight general individual performance requirements which seemed to represent fundamental skill performance were identified. These eight performance requirements were translated into eight categories of content, Fundamental Individual Night Skills Areas, around which a core curriculum for night operations will be organized. The names of these categories are: General Night Environmental Familiarization, Night Direction Finding, Night Target Detection, Avoidance of Detection at Night, Coordinated Night Movement, Intra-Team Communication at Night, Night Target Engagement, and Tactual Discrimination and Manipulation Training. The performance requirements, concept of training, expected performance gains, and relationship among FINS Areas were briefly discussed.

The core curriculum was reviewed by seven departments of the United States Army Infantry School, and there was general agreement the curriculum was complete.

Since it was felt that the core curriculum should be reviewed from time to time in light of new information which will be gained, it was decided to refer to it as a provisional core curriculum for infantry night training.

REFERENCES

1. ATP 7-1, Army Training Program for Infantry and Airborne Division Battle Groups and Infantry and Airborne Divisions. Headquarters, Department of the Army, Washington, D. C., 19 August 1958.
2. ATP 7-17, Army Training Program for Rifle Company Infantry and Airborne Division Battle Groups, Light Weapons Infantryman, Heavy Weapons Infantryman. Headquarters, Department of the Army, Washington, D. C., 11 August 1958.
3. ATP 21-114, Basic Combat Training Program for Male Military Personnel Without Prior Service. Headquarters, Department of the Army, Washington, D. C., 14 November 1958.
4. Command and Staff Department, Advance Sheet: Rifle Company Infantry and Airborne Division Battle Groups. United States Army Infantry School, Fort Benning, Georgia, 12 October 1959.
5. English, H. B. and English, Ava C., A Comprehensive Dictionary of Psychological and Psychoanalytical Terms. New York: Longmans, Green, and Company, Inc., 1958.
6. FM 21-75, Combat Training of the Individual Soldier and Patrolling. Department of the Army, June 1957.
7. FM 100-5, Field Service Regulations: Operations. Department of the Army, September 1954.
8. Lago-Lengquist, D. ABC's of Night Fighting. New Military Times. January 1951. (Translation from Swedish.) In Dingley, N., WDGS Intelligence Report R-54-51, Army Chief of Staff, Intelligence, 15 February 1951.
9. Neal, G. L., A Core Curriculum for Infantry Night Operations Training: Conceptualization and Proposed Content. Draft Task Paper, U. S. Army Infantry Human Research Unit, Fort Benning, Georgia, July 1960.

APPENDIX A

SOME ASSUMPTIONS CONCERNING INFANTRY OPERATIONS

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1. a. Combat reports, combat infantry leaders, and experienced military observers generally agree that the performance of the U. S. Army infantryman has been deficient in night combat operations.

b. Present day infantry leaders generally agree that the U. S. Army infantryman still lacks proficiency in night operations.

2. a. The nonilluminated, dismounted night operation, exemplified by the attack by stealth, patrol, and night withdrawal, poses the greatest difficulty for the individual infantryman and the infantry commander. These operations are difficult because they require movement across country at night without the aid of visible battlefield illuminants to insure tactical security and because it is difficult to maintain continuous and long distance battlefield illumination.

b. The dismounted infantryman, therefore, must depend on his unaided eyes and ears to acquire the environmental information which is necessary to facilitate his performing his job at night as he moves over the battlefield.

c. Although sensory aids and detection devices, such as radar and infra-red, may be available to the infantryman at night, the physical and operating characteristics[1] of these aids and devices, at least those in use today, limit their utility to the moving, dismounted infantryman and may even restrict his freedom of action. This again forces the infantryman to rely upon his unaided sensory receptors as he performs his job.

d. These same type devices when used by an enemy against the dismounted infantryman may tend to make night combat more like day combat, thus making already difficult night combat even more difficult.

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[1] Size, weight, power requirements, configuration, manning requirements, line-of-sight, ease of detection, vulnerability to countermeasures, etc.

e. Considering all the possible difficulties in the dismounted night infantry operation, it is apparent this operation deserves the greatest training research attention at this time.

3. In future infantry warfare, the night dismounted tactical operation will achieve greater importance due to the necessity of operating against potential enemies who are known to favor and operate with great proficiency at night, the need to utilize the cover of darkness to minimize the possibility of detection by enemy observers and thus avoid becoming nuclear targets, the need to cover increased frontages at night, and the need to implement the growing military awareness of the tactical and psychological advantage which can be accrued from using the night operation.

4. It is assumed that current infantry tactical doctrine for small unit, dismounted night actions will remain basically unchanged throughout the next few years, and any changes which do occur will be gradual or in the form of variations of present basic doctrine.

5. For the present, current doctrine will be accepted as adequate to meet the unique problems associated with night operations. It will be assumed that current deficient individual and unit performance in night operations is a function of current training designed to meet the requirements of night operations. This does not preclude the possibility that it may be eventually determined that part of this deficiency is a function of doctrine having been designed independently of the psychological, sensory, and physiological capabilities of the individual participants.

6. Although many experienced infantrymen may contend that each infantry operation is specific to a given situation, it is assumed that a communality of expected unit individual performances exists across operations. Variations in terrain, weather, and tactical situations merely modify the application of these performances.

7. a. Tactical doctrine found in field manuals, training texts, circulars, etc., furnish general guidance for the conduct of tactical operations.

b. From this general guidance can be deduced the desired performance requirements for units and individuals who belong to these units, and from these desired performances can be inferred the training requirements to meet these desired performances.

8. The operational problems encountered by the Light Weapons Infantryman in the dismounted night operation are representative, to varying degrees, of those encountered by all types of dismounted troops[1] operating at night. However, the degree of mobility of these other types of troops at night may be restricted by the type of equipment[2] they operate and use, or the specific nature of their job. It is assumed that a night operations core curriculum developed for the LWI could be adapted for training other type infantrymen with appropriate job relevant modifications.

9. The tactical performance of an infantry tactical team (platoon, squad, fire team, or patrol) is a function of the combined skill proficiency levels of the individuals who make up these teams. Therefore, team performance can be improved by raising the combat skill proficiency levels of the individual team members.

10. Certain common skills underlie the jobs and duties of all personnel[3] who are assigned to LWI tactical teams. Therefore, all members of a tactical team should be proficient in these common skills, and a core curriculum designed to impart these skills is applicable to all personnel who function as members of LWI teams.

11. a. Infantry operations are potentially high attrition operations, and there will be lags in the replacement system; therefore, any member of a tactical team may be required to assume a leadership position in an emergency situation and function as the team leader. Thus, any rifleman could

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[1] Examples: Heavy weapons infantrymen, combat engineers, field wiremen, medical aid men, infantry ground surveillance radar crewmen, etc.

[2] Mortars, recoilless rifles, anti-tank missiles, mine detectors, radio sets.

[3] Types of personnel who compose a typical large size infantry tactical team are: (a) a platoon leader, (b) the platoon sergeant, (c) squad leaders, (d) fire team leaders, (e) automatic riflemen, (f) senior riflemen, (g) riflemen, (h) a rocket gunner, (i) assistant rocket gunners, (j) machinegunners, (k) assistant machinegunners, and (l) ammunition bearers.

be called upon, when experienced leaders are not available, to serve as leader of very small teams such as an infiltrating group, a small patrol, a team of guides, or a team moving forward to man an outpost or listening post.

b. Therefore, a core curriculum should contain certain elementary leader-type technical skills to facilitate some minimum level of interchangeability among team members.

12. A detailed analysis of the training problems underlying deficient performance in infantry night operations would probably reveal the following training factors contributed to this performance deficiency: (a) the subject matter content, (b) the programming of content, (c) training methods, (d) training facilities, (e) trainee assimilations of content and its meaningfulness to them, (f) cadre attitude toward night training, (g) trainee attitude toward night training, and (h) the implementation of night training policies. It is assumed that factors "(b)" through "(h)" and consequent operational performance flow from the implementation of subject matter content. Therefore, the first problem which should be attacked in improving night operations training is the determination of the appropriate training content.

13. The content of a training curriculum for night operations can be initially derived by an analysis of the operational requirements for the rifle platoon, its components, and special purpose teams, because it is assumed that these basic units are the building blocks of infantry operations; consequently, the problems affecting larger units are magnifications of those encountered by these basic units and their members.